

CLAIMS

We claim:

- 1) A method for sorting product portions into batches, comprising:
 - a) directing product portions from a supply along a first flow path;
 - b) accumulating a first plurality of said product portions at a first weighing station on said first flow path;
 - c) weighing said first plurality of product portions;
 - d) directing said product portions from said supply along a second flow path when a weight of said first plurality of product portions reaches a first predetermined weight;
 - e) discharging a first batch of said product portions when said weight of said first plurality of product portions is within a first predetermined weight range;
 - f) accumulating a second plurality of said product portions at a second weighing station on said second flow path;
 - g) weighing said second plurality of product portions;
 - h) directing said product portions from said supply along said first flow path after a weight of said second plurality of product portions reaches a second predetermined weight; and,
 - i) discharging a second batch of said product when said weight of said second plurality of product portions is within a second predetermined weight range.
- 2) The method of claim 1 wherein said second predetermined weight range is the same weight range as the first predetermined weight range.

3) The method of claim 2 further comprising manually adding product to said first plurality of product portions or manually removing product from said first plurality of product portions to bring said weight of said first plurality of product portions within said first predetermined weight range.

4) The method of claim 1 wherein said product portions are directed along said first flow path when a weight of said second plurality of product portions reaches said second predetermined weight.

5) The method of claim 1 wherein said first predetermined weight is equal to said second predetermined weight.

- 6) A method for sorting product portions into batches, comprising:
- a) directing product portions from a supply along a first flow path;
 - b) accumulating a first plurality of said product portions at a first weighing station on said first flow path;
 - c) weighing said first plurality of product portions;
 - d) directing said product portions from said supply along a second flow path when a weight of said first plurality of product portions reaches a first predetermined weight;
 - e) discharging a first batch of product portions when a weight of said first plurality of product portions is within a first predetermined weight range;
 - f) accumulating a second plurality of said product portions at a second weighing station on said second flow path;
 - g) weighing said second plurality of product portions; and

h) discharging a second batch of product portions when a weight of said second plurality of product portions is within a second predetermined weight range.

7) The method of claim 6 further comprising adding product to said first plurality of product portions and removing product from said first plurality of product portions to bring said weight of said first plurality of product portions within said first predetermined weight range.

8) The method of claim 6 wherein said first predetermined weight range and the second predetermined weight range are the same weight range.

9) The method of claim 6 further comprising directing said product portions along said first flow path when a weight of said second plurality of product portions reaches a second predetermined weight.

10) The method of claim 9 wherein said first predetermined weight is equal to said second predetermined weight.

11) A method for sorting product portions into batches, comprising:

- a) directing product portions from a supply along a first flow path;
- b) accumulating a first plurality of said product portions at a first weighing station on said first flow path;
- c) weighing said first plurality of product portions;
- d) directing said product portions along a second flow path when a weight of said first plurality of product portions reaches a first predetermined weight;

e) adjusting said weight of said first plurality of product portions by adding product to said first plurality of product portions or removing product from said first plurality of product portions to bring said weight of said first plurality of product portions within a first predetermined weight range;

f) discharging a first batch of product portions when said weight of said first plurality of product portions is within said first predetermined weight range;

g) accumulating a second plurality of said product portions at a second weighing station on said second flow path;

h) weighing said second plurality of product portions;

i) directing said product portions along said first flow path when a weight of said second plurality of product portions reaches a second predetermined weight;

j) adjusting said weight of said second plurality of product portions by adding product to said second plurality of product portions or removing product from said second plurality of product portions to bring said weight of said second plurality of product portions within a predetermined weight range; and

k) discharging said second plurality of product portions when said weight of said second plurality of product portions is within said second predetermined weight range.

12) The method of claim 11 wherein said first predetermined weight range and the second predetermined weight range are the same weight range.

13) The method of claim 11 wherein a said first predetermined weight is equal to said second predetermined weight.

14) A method for sorting product portions into batches, comprising:

- a) directing product portions from a supply along a first flow path;
- b) accumulating a first plurality of said product portions at a first weighing station on said first flow path;
- c) weighing said first plurality of product portions;
- d) directing said product portions along a second flow path when a weight of said first plurality of product portions reaches a first predetermined weight;
- e) accumulating a second plurality of said product portions at a second weighing station on said second flow path;
- f) weighing said second plurality of product portions;
- g) directing said product portions along a third flow path when a weight of said second plurality of product portions reaches a second predetermined weight;
- h) accumulating a third plurality of said product portions at a third weighing station on said third flow path;
- i) weighing said third plurality of product portions;
- j) directing said product portions along a fourth flow path when a weight of said third plurality of product portions reaches a third predetermined weight;
- k) accumulating a fourth plurality of said product portions at a fourth weighing station on said fourth flow path;
- l) weighing said fourth plurality of product portions; and
- m) directing said product portions along said first flow path when a weight of said fourth plurality of product portions reaches a fourth predetermined weight.

15) The method of claim 14 further comprising adding product to said first plurality of product portions or removing product from said first plurality of product portions to bring said weight of said first plurality of product portions within a first predetermined weight range.

16) The method of claim 14 wherein said first, second, third and fourth predetermined weights are equal.

17) A system for sorting a supply of product portions into batches, comprising:

a) a directing structure having an entrance that accepts said supply of product portions from the supply;

b) a first weigher for accepting said product portions from said directing structure, said first weigher accumulating said product portions and producing a first weight signal having a value that relates to a weight of product portions accumulated in said first weigher, said first weigher including an exit;

c) a second weigher for accepting said product portions from said directing structure, said second weigher accumulating said product portions and producing a second weight signal having a value that relates to a weight of product portions accumulated in said second weigher, said second weigher including an exit;

d) a batch weight controller receiving said first and second weight signals from said first and second weighers and sending signals for operating the directing structure, said first weigher, and said second weigher, said controller sends a first signal to operate said directing structure to direct the product portions along a first flow path to the first weigher until said value of said first weight signal indicates that the accumulated weight of product portions in the first weigher has reached a first predetermined weight, when the product portions in the first weigher reaches said first predetermined weight said controller sends a second signal to operate said directing structure to direct the product portions from the supply along a second flow path to the second weigher until said value of said second weight signal indicates that the accumulated weight of product portions in the second weigher has reached a second predetermined weight.

18) The system of claim 17 wherein said controller sends a third signal to open said exit of said first weigher when said weight of product portions in the first weigher is within a first predetermined weight range.

19) The system of claim 17 further comprising a first staging hopper positioned to receive a batch of product portions from the first weigher, said controller provides a signal to the staging hopper that controls a time of release of said batch of product portions from the staging hopper.

20) The system of claim 17 further comprising a funnel that directs batches of said product portions from said first weigher and said second weigher to a predetermined location.

21) The system of claim 14 wherein the first predetermined weight is equal to the second predetermined weight.

22) A system for sorting a supply of product portions into batches, comprising:

a) a directing structure having an entrance that accepts said supply of product portions from the supply;

b) a first weigher for accepting said product portions from said directing structure, said first weigher accumulating said product portions and producing a first weight signal having a value that relates to a weight of product portions accumulated in said first weigher, said first weigher including an exit;

c) a second weigher for accepting said product portions from said directing structure, said second weigher accumulating said product portions and producing

a second weight signal having a value that relates to a weight of product portions accumulated in said second weigher, said second weigher including an exit;

d) a batch weight controller receiving said first and second weight signals from said first and second weighers and sending signals for operating the directing structure, said first weigher, and said second weigher, said controller sends a first signal to operate said directing structure to direct the product portions along a first flow path to the first weigher until said value of said first weight signal indicates that the accumulated weight of product portions in the first weigher has reached a first predetermined weight, when the product portions in the first weigher reaches said first predetermined weight said controller sends a second signal to operate said directing structure to direct the product portions from the supply along a second flow path to the second weigher until said value of said second weighting signal indicates that the accumulated weight of product portions in the second weigher has reached a second predetermined weight, said controller sends a third signal to open said exit of said first weigher when said weight of product portions in the first weigher is within a first predetermined weight range, said controller sends a fourth signal to open said exit of said second weigher when said weight of product portions in the second weigher is within a second predetermined weight range.

23) The system of claim 22 wherein said first predetermined weight range is the same weight range as the second predetermined weight range.

24) An apparatus for sorting meat portions from a supply of meat portions into batches, comprising:

a) a diverter having an entrance opening that accepts said supply of meat portions provided by said conveyor and first and second exit openings that include first and second doors;

b) a first weigher for accepting said meat portions from said first exit opening of the diverter when said first door of the diverter is open, said first weigher accumulating said meat portions and producing a first weight signal having a value that relates to a weight of meat portions accumulated in said first weigher, said first weigher including an exit including an exit opening having a door;

c) a second weigher for accepting said meat portions from said second exit opening of the diverter when said second door of the diverter is open, said second weigher accumulating said meat portions and producing a second weight signal having a value that relates to a weight of meat portions accumulated in said second weigher, said second weigher including an exit including an exit opening having a door; and

d) a batch weight controller that receives said first and second weight signals from said first and second weighers and sends signals for operating the diverter, said first weigher, and said second weigher, said controller causes said first door of the diverter to open to provide meat portions to said first weigher until said value of said first weight signal indicates that the weight of meat portions in the first weigher has reached a first predetermined weight, said controller causes said first door of the diverter to close and said second door of the diverter to open to provide meat portions to said second weigher when said weight of meat portions in the first weigher reaches said first predetermined weight until said value of said second weight signal indicates that the weight of meat portions in the second weigher has reached a second predetermined weight, said controller causes said door of said first weigher to open when said weight of meat portions in the first weigher is within a first predetermined weight range, said controller causes said door of said second weigher to open when said weight of meat portions in the second weigher is within a second predetermined weight range.

25) The apparatus of claim 24 further comprising a first staging hopper positioned to receive a batch of meat portions from the first weigher, said controller provides a signal the staging hopper that controls a time of release of said batch of meat portions from the staging hopper.

26) The apparatus of claim 24 further comprising a funnel that directs batches of said meat portions from said first weigher and said second weigher to a predetermined location.

27) The apparatus of claim 24 wherein the first predetermined weight is equal to the second predetermined weight.

28) The apparatus of claim 24 wherein the first predetermined weight range is the same as the second predetermined weight range.

29) The apparatus of claim 24 wherein said directing chute includes a directing flap movable between a first position that directs product portions from said entrance opening to said first exit opening and a second position that directs product portions from said entrance opening to said second exit opening.

30) The apparatus of claim 29 wherein said batch weight controller moves said directing flap to said first position when said controller causes said first door of the directing chute to open.

31) An apparatus for sorting a supply of product portions into batches, comprising:

a) a first diverter having an entrance that accepts said supply of product portions from the supply and first and second exits;

b) a second diverter having an entrance that accepts product portions from the first exit of the first diverter and first and second exits;

c) a third diverter having an entrance that accepts product portions from the second exit of the first diverter and first and second exits;

d) a first weigher that accepts said product portions from said first exit of the second diverter, said first weigher including an exit having a door;

e) a second weigher that accepts said product portions from said second exit of the second diverter, said weigher including an exit having a door;

f) a third weigher that accepts said product portions from said first exit of the third diverter, said first weigher including an exit having a door;

g) a fourth weigher that accepts said product portions from said second exit of the third diverter, said weigher including an exit having a door;

h) a batch weight controller that receives weight information from said weighers, and batch weight controller sends signals for operating the diverters and the weighers, said controller sends a first signal to operate the diverters to direct the product portions from the supply to the first weigher until a weight of product portions in the first weigher reaches a first predetermined weight, when the product portions in the first weigher reach said first predetermined weight said controller sends a signal to operate said diverters to direct the product portions from the supply to the second weigher until a weight of product portions in the second weigher reaches a second predetermined weight, when the product portions in the second weigher reach said second predetermined weight said controller sends a signal to operate said diverters to direct the product portions from the supply to the third weigher until a weight of product portions in the second weigher reaches a third predetermined weight, when the product portions in the third weigher reach said third predetermined weight said controller

sends a signal to operate said diverters to direct the product portions from the supply to the fourth weigher until a weight of product portions in the fourth weigher reaches a fourth predetermined weight, when the product portions in the fourth weigher reach said fourth predetermined weight said controller sends a second signal to operate said diverters to direct the product portions from the supply to the first weigher.

32) The apparatus of claim 31 wherein each of said directing chutes include a directing flap movable between a first position that directs product portions from the entrance opening of the directing chute to the first exit opening of the directing chute and a second position that directs product portions from the entrance opening of the directing chute to the second exit opening of the directing chute.